UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,602	11/25/2003	Pawan Goyal	ARC920030077US1	5994

55508   7590   09/28/2007

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EXAMINER
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ART UNIT	PAPER NUMBER
2161	

MAIL DATE	DELIVERY MODE
09/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,602	GOYAL, PAWAN	
	Examiner	Art Unit	
	Chelcie Daye	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,22-24 and 26* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20,22-24, and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is issued in response to applicant's amendment filed July 12, 2007.

2.   Claims 1-20,22-24,and 26 are presented. No claims added and claims 21 and 25

remain cancelled.

3.   Claims 1-20,22-24,and 26 are pending.

4.   Applicant's arguments filed July 12, 2007, have been fully considered but they

are not persuasive.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   **Claims 1-20,22-24, and 26 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Yanai (US Patent No. 6,502,205) filed November 10, 2000, in

view of Shomler (US Patent No. 5,623,599) filed July 29, 1994.

Regarding Claim 1, Yanai discloses a method for asynchronously

remotely copying database content changes from a primary site to a remote site,

the method comprising:

associating a sequential identification with each respective log record write

and each corresponding data record write received at the primary site, each data

record write containing modifications to a page of the database and each log

record write containing information describing modifications to the page of the

database for a corresponding data record write (column 32, lines 34-58 and

column 33, lines 7-10, Yanai). However, Yanai is silent with respect to

asynchronously remotely copying each respective log record write from the

primary site to the remote site; receiving an acknowledgement at the primary site,

the acknowledgement corresponding to a log record write that has been

completed at the remote site; and asynchronously remotely copying each data

record write having a sequential identification that is prior to or equal to the

sequential identification of the log record write corresponding to the received

acknowledgement. On the other hand, Shomler discloses asynchronously

remotely copying each respective log record write from the primary site to the

remote site (column 4, lines 10-17, Shomler); receiving an acknowledgement at

the primary site, the acknowledgement corresponding to a log record write that

has been completed at the remote site (column 9, lines 33-39, Shomler); and

asynchronously remotely copying each data record write having a sequential

identification that is only prior to or equal to the sequential identification of the log

record write corresponding to the received acknowledgement (column 10, lines

34-45, Shomler). Yanai and Shomler are analogous art because they are from

the same field of endeavor of maintaining a copy of data stored at a remote

location from the primary data storage device. It would have been obvious to one

of ordinary skill in the art at the time of the invention to incorporate Shomler's

teachings into the Yanai system. A skilled artisan would have been motivated to combine as suggested by Shomler at column 3, lines 9-14, in order to secure transactions at a remote site without interrupting the flow of other transactions in the system. Therefore, such a system should be simple to implement, efficient and non-disruptive to existing asynchronous copy systems.

Regarding Claims 2 and 8, the combination of Yanai in view of Shomler, disclose the method wherein the sequential identification is a monotonically increasing identification number (column 11, lines 38-46, Shomler).

Regarding Claims 3 and 9, the combination of Yanai in view of Shomler, disclose the method wherein the sequential identification is a monotonically increasing time-stamp identification (column 7, lines 43-60, Shomler).

Regarding Claim 4, the combination of Yanai in view of Shomler, disclose the method wherein a log record write is asynchronously remotely copied from the primary site to the remote site before a data record write is asynchronously remotely copied from the primary site to the remote site (column 10, lines 43-67, Yanai).

Regarding Claim 5, the combination of Yanai in view of Shomler, disclose the method wherein each log record write is a log block (column 9, lines 26-32,

Shomler)[1] and each data record write is a data block write (column 9, lines 18-20, Shomler)[2].

Regarding Claim 6, the combination of Yanai in view of Shomler, disclose the method further comprising:

asynchronously receiving a log record write at the remote site (column 4, lines 10-17, Shomler);

storing the received log record write at the remote site (column 10, lines 43-58, Yanai);

sending an acknowledgement from the remote site to the primary site when the received log record write is complete (column 10, lines 1-8, Shomler);

asynchronously receiving a data record write at the remote site from the primary site (column 10, lines 34-45, Shomler); and

storing the received data record write (column 10, lines 43-58, Yanai).

Regarding Claim 7, the combination of Yanai in view of Shomler, disclose a method for asynchronously remotely coping database content changes occurring at a primary site at a remote site, the method comprising:

asynchronously receiving a log record write at the remote site (column 4, lines 10-17, Shomler), each respective log record received at the remote site having an associated sequential identification and a corresponding data record

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[1] Examiner Notes: A token is a primitive block of structured text, which therefore corresponds with the log

write, each data record write containing modifications to a page of the database and each log record write containing information describing modifications to the page of the database for a corresponding data record write (column 32, lines 34-58 and column 33, lines 7-10, Yanai);

storing the received log record write at the remote site (column 10, lines 43-58, Yanai);

sending an acknowledgement from the remote site to the primary site when the received log record write is complete (column 10, lines 1-8, Shomler);

asynchronously receiving a data record write at the remote site from the primary site, each received data record write having a sequential identification that is only prior to or equal to the sequential identification of the log record write corresponding to the received acknowledgement (column 10, lines 34-45, Shomler); and

storing the received data record write (column 10, lines 43-58, Yanai).

Regarding Claim 10, the combination of Yanai in view of Shomler, disclose a storage system for asynchronously remotely copying content changes stored in the storage system, the system comprising:

a primary site having a storage system separately storing log records and data records (Fig.12, item 214, Yanai);

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block.
[2] Examiner Notes: "Token" corresponds to block.

a remote site having a storage system separately storing log records and a data records (Fig.12, item 246, Yanai),

the primary site associating a sequential identification with each respective log record write and each corresponding data record write occurring at the primary site (column 32, lines 34-58 and column 33, lines 7-10, Yanai) and asynchronously remotely copying each respective log record write from the primary site to the remote site (column 4, lines 10-17, Shomler), each data record write containing modifications to a page of the database and each log record write containing information describing modifications to the page of the database for a corresponding data record write (column 32, lines 34-58 and column 33, lines 7-10, Yanai), the remote site sending to the primary site an acknowledgement corresponding to a log record write that has been completed at the remote site (column 10, lines 1-8, Shomler), and the primary site asynchronously remotely copying to the remote site each data record write having a sequential identification that is only prior to or equal to the sequential identification of the log record write corresponding to the received acknowledgement (column 10, lines 34-45, Shomler).

Regarding Claim 11, the combination of Yanai in view of Shomler, disclose the system wherein the sequential identification is a monotonically increasing identification number (column 11, lines 38-46, Shomler).

Regarding Claim 12, the combination of Yanai in view of Shomler,

disclose the system wherein the sequential identification is a monotonically

increasing time-stamp identification (column 7, lines 43-60, Shomler).

Regarding Claim 13, the combination of Yanai in view of Shomler,

disclose the system wherein a log record write is asynchronously remotely

copied from the primary site to the remote site before a data record write is

asynchronously remotely copied from the primary site to the remote site (column

10, lines 43-67, Yanai).

Regarding Claim 14, the combination of Yanai in view of Shomler,

disclose the method wherein each log record write is a log block (column 9, lines

26-32, Shomler) and each data record write is a data block write (column 9, lines

18-20, Shomler).

Regarding Claim 15, the combination of Yanai in view of Shomler,

disclose a primary site of a distributed storage system, the system comprising:

a storage system separately storing log records and data records (Fig. 12,

item 214, Yanai), each data record write containing modifications to a page of the

database and each log record write containing information describing

modifications to the page of the database for a corresponding data record write

(column 32, lines 34-58 and column 33, lines 7-10, Yanai); and

a controller (Fig.1, item 16, Yanai) associating a sequential identification

with each respective log record write and each corresponding data record write

occurring at the primary site (column 32, lines 34-58 and column 33, lines 7-10,

Yanai) and asynchronously remotely copying each respective log record write

from the primary site to a remote site (column 4, lines 10-17, Shomler), the

controller receiving an acknowledgement corresponding to a log record write that

has been completed at the remote site and (column 9, lines 33-39, Shomler), in

response, asynchronously remotely copying to the remote site each data record

write having a sequential identification that is only prior to or equal to the

sequential identification of the log record write corresponding to the received

acknowledgement (column 10, lines 34-45, Shomler).

Regarding Claim 16, the combination of Yanai in view of Shomler,

disclose the system wherein the sequential identification is a monotonically

increasing identification number (column 11, lines 38-46, Shomler).

Regarding Claim 17, the combination of Yanai in view of Shomler,

disclose the system wherein the sequential identification is a monotonically

increasing time-stamp identification (column 7, lines 43-60, Shomler).

Regarding Claim 18, the combination of Yanai in view of Shomler,

disclose the system wherein a log record write is asynchronously remotely

copied from the primary site to the remote site before a data record write is

asynchronously remotely copied from the primary site to the remote site (column

10, lines 43-67, Yanai).

Regarding Claim 19, the combination of Yanai in view of Shomler,

disclose the method wherein each log record write is a log block (column 9, lines

26-32, Shomler) and each data record write is a data block write (column 9, lines

18-20, Shomler).

Regarding Claim 20, the combination of Yanai in view of Shomler,

disclose a remote site of a distributed storage system, the system comprising:

a storage system separately storing log records and data records (Fig.12,

item 246, Yanai), each data record write containing modifications to a page of the

database and each log record write containing information describing

modifications to the page of the database for a corresponding data record write

(column 32, lines 34-58 and column 33, lines 7-10, Yanai),

a controller (Fig.1, item 44, Yanai) asynchronously receiving a log record

write from a primary site (column 4, lines 10-17, Shomler), each respective log

record received at the remote site having an associated sequential identification

and a corresponding data record write (column 32, lines 34-58 and column 33,

lines 7-10, Yanai), storing the received log record write in the storage system

(column 10, lines 43-58, Yanai) and sending an acknowledgement from the

remote site to the primary site when the received log record write is complete

(column 10, lines 1-8, Shomler), the controller further asynchronously receiving a

data record write from the primary site, each received data record write

comprising a sequential identification that is only prior to or equal to the

sequential identification of the log record write corresponding to the received

acknowledgement (column 10, lines 34-45, Shomler), and storing the received

data record write (column 10, lines 43-58, Yanai).

Regarding Claim 22, the combination of Yanai in view of Shomler,

disclose the remote site wherein the sequential identification is a monotonically

increasing identification number (column 11, lines 38-46, Shomler).

Regarding Claim 23, the combination of Yanai in view of Shomler,

disclose the remote site wherein the sequential identification is a monotonically

increasing time-stamp identification (column 7, lines 43-60, Shomler).

Regarding Claim 24, the combination of Yanai in view of Shomler,

disclose the remote site wherein a log record write is asynchronously remotely

copied from the primary site to the remote site before a data record write is

asynchronously remotely copied from the primary site to the remote site (column

10, lines 43-67, Yanai).

Regarding Claim 26, the combination of Yanai in view of Shomler,

disclose the remote site wherein each log record write is a log block (column 9,

lines 26-32, Shomler) and each data record write is a data block write (column 9,

lines 18-20, Shomler).

Response to Arguments

Applicant argues, Yanai nor Shomler disclose a method comprising at least

asynchronously remotely copying each data record write having a sequential

identification that is only prior to or equal to the sequential identification of the log record

write corresponding to the received acknowledgement.

Examiner respectfully disagrees. To begin, Shomler states, "*The present invention*

relates to data preservation in an information handling system by asynchronous remote data duplexing

(also termed remote data copying) and more particularly, to the real-time continuous copying of data at a

remote location from copies based at a primary site storage subsystem…Asynchronous copy systems

accomplish sequence integrity through communications between primary and secondary DASD

subsystems. In such systems, a system at the primary site can determine the sequence among different

update write operations among all DASD subsystems at the primary site and communicate that

information to the DASD subsystem at the remote site. The secondary subsystem in turn uses the

sequence information from the primary to control the application of update data to the secondary DASD

data copy" (see column 1, lines 14-19 and 50-59). The preceding excerpt details the purpose

of the Shomler invention, which is to focus on the asynchronous remote data duplexing

(i.e., copying). This is achieved through sequence integrity, which maintains the

consistency of the arrangement of the write updates from one site to another site.

Thereby, teaching the features of asynchronously remotely copying each data record

write having a sequential id. Next, Shomler states, "*In this system, the remote copy system described may, as part of its normal operation, cause the secondary to send periodic and regular acknowledgement messages (ACKN) to the primary...These ACKNs identify the event number (sequence or clock time) for data and messages received from the primary, with each ACKN informing the primary that all events up to and including the event number given have been secured at the secondary. Such a stream of ACKN messages from a communications recipient (secondary) to a sender (primary) is usual and conventional in asynchronous telecommunications protocols*" (see column 10, lines 34-45). The preceding excerpt discusses the use of acknowledgement messages (ACKN's), which is the acknowledgement of an update copy from the remote system to the primary, thereby disclosing the receiving of an acknowledgement. Further, since the ACKN's identify event numbers (i.e., sequence numbers, which corresponds to the sequential identification) for the data received up to and including (i.e., <=) the sequence number given, thus discloses a sequential id that is prior to or equal to (<=) the sequential id of the log record. As such, the above-argued limitation is in fact fully disclosed.

Applicant argues, Shomler's MARKER TOKEN is not the claimed log record write of claim 1 because the MARKER TOKEN does not contain information describing to modifications to the page of the database for a corresponding data record write.

Examiner respectfully disagrees. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In particular, the applicant is arguing that the Shomler

reference does not teach the claimed log record write because the MARKER TOKEN

does not contain information describing to modifications to the page of the database for

a corresponding data record write. However, Shomler was not relied upon for the

disclosure of the log record write containing information describing to modifications to

the page of the database for a corresponding data record write. In contrast, Yanai was

relied upon for the disclosure of such limitation and is cited in the action above. As such,

it is the combination of the two(2) references, which make up the invention as a whole.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

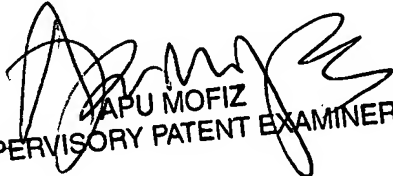than SIX MONTHS from the mailing date of this final action.

Points of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chelcie Daye whose telephone number is 571-272-3891. The examiner can normally be reached on M-F, 7:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on 571-272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chelcie Daye
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September 24, 2007

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SUPERVISORY PATENT EXAMINER